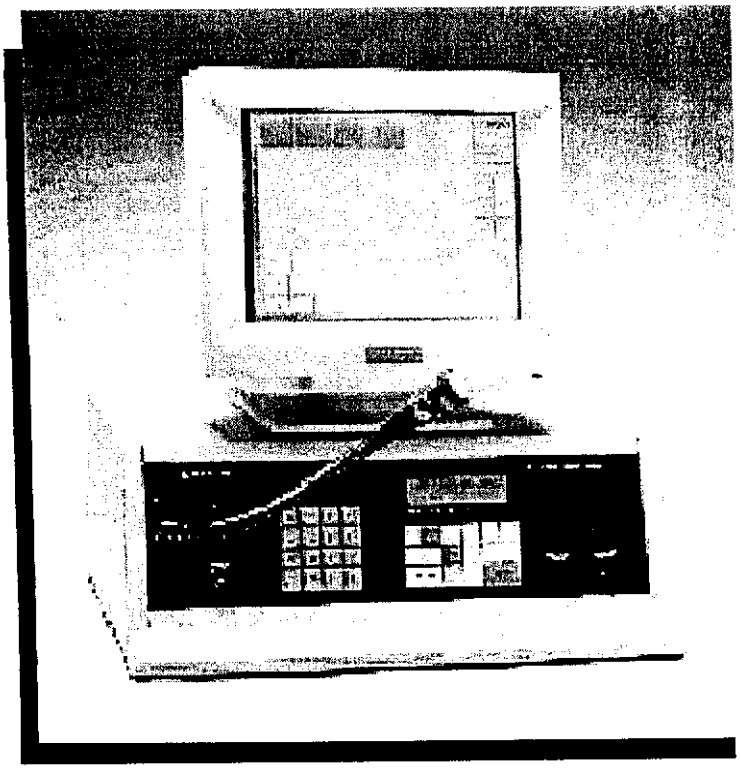
ZETRON®

# Model 4217

## Series 4000 Video Console



### FEATURES

- Supports up to 48 channels — any combination of radio and telephone may be implemented
- Compatible with M4008, M4024, M4048 Common Controllers
- Up to 16 operator positions — may mix conventional button consoles (desktop or rack mounted) with video consoles
- Choice of touch screen and/or mouse operation with panel, or keyboard for encoder entry and special functions
- High resolution VGA graphics display provides clear and concise representation of control information
- Large, easy to use screen "buttons" for touch use. Screen buttons respond to touch or mouse activation in 3-D fashion — buttons appear to depress. Color and depth effects used to indicate function status
- Advanced one-touch channel group operation for multiple selects, transmits, and patches. Groups can be defined by operator
- One-touch paging operation using named buttons instead of pager codes. Hierarchical menu structure allows pages to be logically grouped for easy access (e.g. Woodinville, Fire, EMS, etc.)
- ANI-alias translation — the caller's ID is translated into a configurable name and displayed on the receiving channel
- Flexible audio panel options allow for remote or rack mounted speakers, encoder and function keypad, speaker volume control, large 24-hour time clock, VU meter
- Near "turnkey" operation. No complicated utilities requiring special skills. Just define the common control setup (channel configuration, auxiliary I/O, etc.)
- Screen organization allows control of up to 36 channels at all times -- even when performing auxiliary I/O, paging, or setup functions. Menu functions do not restrict channel operation such as transmit, select, frequency select, mute, etc.

### INTRODUCTION

The Zetron Model 4217 Video Console is the most sophisticated dispatch operator position in the Series 4000 family. The Model 4217 provides a compact, uncluttered means of displaying and controlling system status and activity. Integrated touch screen, trackball (or mouse), and keypad provide exceptional flexibility of operation. The high-resolution color graphics display presents status clearly and can be configured to present only essential controls and information.

## COMPONENTS

### Console System Unit

Pentium computing power provides superior responsiveness and a degree of operator integration not possible with button or module-type consoles.

### VGA Monitor

A Low Emission VGA monitor is used to present operator displays in high-resolution, bit-mapped, color graphics. Color is used to highlight common operations and critical information.

### Touch Screen Monitor (Optional)

Surface Acoustic Wave touch screen technology combines superior clarity, positive touch response, and high reliability into an easy to use operator interface.

Touch operation is not degraded by dust or fingerprints, nor can it be activated by flying insects.

### Audio Panel

The Model 4217 Dispatch Console (audio panel) provides select and unselect speakers, clock and VU meter, microphone inputs, and speaker volume controls. The 16 function keys may be programmed for system control, instant call paging, auxiliary output, and/or channel control operations. The Audio Panel is only two inches in depth and may be rackmounted or included in a desktop enclosure.

### Standard Trackball or Mouse

A choice of trackball or mouse is offered with the system. The pointing device may be operated simultaneously with the touch screen and keyboard. The mouse buttons offer "one click" channel select and transmit operation.

### Standard Two-Tone and DTMF Paging

A multi-format encoder is included for applications that require paging or tone alerting operations. Standard Motorola/GE two-tone and DTMF formats are included. Other paging formats, such as 5/6-tone, custom two-tone, and Plectron are available as options.

## OPERATION

### Display Organization

The screen is organized into four main regions: Channel Display, Primary Channel Control, Secondary Control, and System Menu Region.

Channel display organization may be defined by the dispatcher - multiple arrangements may be saved and recalled for shift changes, operator preference, etc. Each channel display provides the channel label, Call and ANI displays, base station control status, patching and volume status.

Flexible channel volume control options include all-mute, channel-mute, volume increase and decrease, and volume enhance.

## MENUS

Menus selected from the System Menu Region, overlay the Secondary Channel Control buttons. All actions are initiated through easily read and intuitively labeled buttons.

### Setup Menu

From the Setup Menu the operator may define multiple channel display layouts which can be recalled for shift changes or to suit operator preferences.

Function groups are defined from the Setup Menu. Commonly used Simul-Select, simulcast, and multichannel patch group operations can be entered and stored.

### Paging Menu

Instant-call paging may be operated from the Paging Menu and/or from the Model 4217 keyboard. Pages may be stacked and sent in sequence. Alternatively, page codes may be manually entered. Page buttons can have labels up to three lines long.

### Group Menu

Previously defined Simul-Select, simulcast, and multichannel patch groups are invoked from the Group Menu. A single button may be used to replace previous multistep operations.

### Auxiliary Menu

Operation of contact closures is performed through the Aux. I/O Menu. Named buttons can be pressed to activate lights, doors, and other external devices. Other buttons indicate the status of alarms and other inputs.

## TOUCH/MOUSE/KEYBOARD USE

"Select" and "Instant Transmit" functions may be performed from dedicated mouse/trackball buttons. Transmit operation may be keyed from touch screen, audio panel, function keypad, mouse, or foot switch. Keypad function keys may be programmed via VCPS to perform "hot-key" operations such as emergency alerts, pages, or door locks.

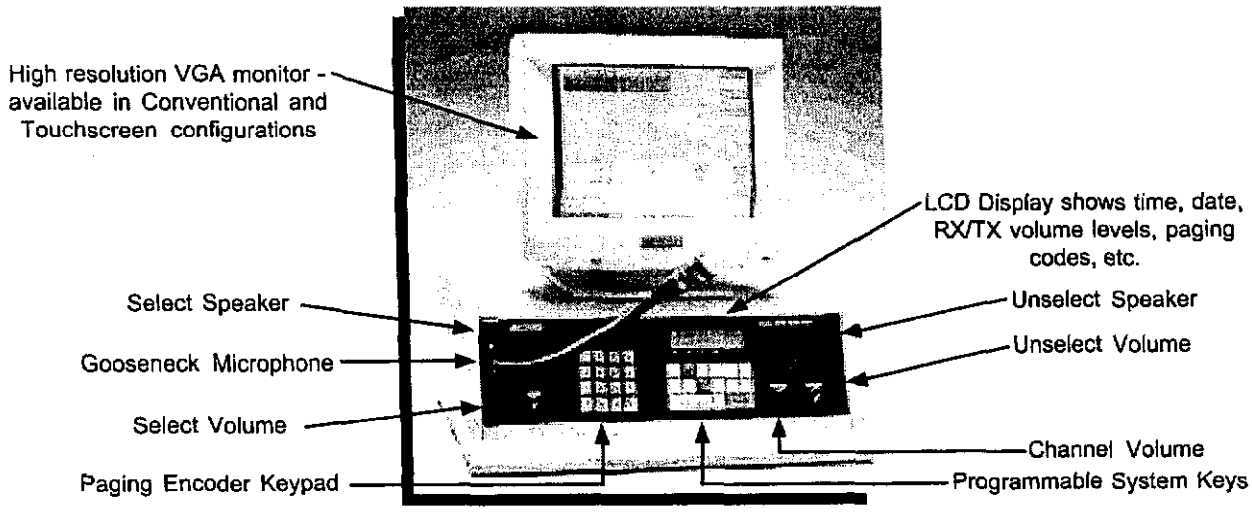
## SYSTEM CONFIGURATION (VCPS)

The Video Console Programming Software (VCPS) provides complete configuration control of system and console operating parameters including channel labels, base station functions, instant-call paging definitions, ANI alias and many others.

VCPS allows for specification and location of system buttons on screen - only the functions necessary for a particular system need be enabled.

## TRAINING/FAMILIARIZATION

Console software may be run off-line (without common control equipment) on any IBM compatible PC with a color VGA screen and mouse. This is useful for training, familiarization, and configuration.




## SYSTEM FEATURES

*The following is a partial list of features of the Model 4217 Video Console:*

**Select/Unselect Speakers**

The two speakers are separated to provide a left/right audio effect making it easy to distinguish whether the monitored call was from the primary (Selected) channel or some other channel. Selecting a channel moves its monitor audio to the Select speaker.

**Call**

When channel activity is present the word "CALL" flashes to the screen in a distinctive color making it easy to locate the source of the call. In addition, the call indication remains for a few seconds after the transmission ceases in case the operator was busy with another activity. When equipped with ANI, the caller's name or number is also displayed.

**Mute/All-Mute**

Channel muting allows the operator to instantly reduce the volume of a channel to a predetermined level. Removing a source of unnecessary traffic helps the operator to concentrate on the task at hand. All-Mute instantly reduces the volume of all non-selected channels at once. The All-Mute may be timed to ensure that the system is never left unmonitored for an extended period of time.

**Individual Volume**

Each channel volume may be set independent of others allowing the operator to place listening priority based on volume level.

**Transmit**

The operator may transmit over the selected channel simply by pressing the Keyboard "Xmit" button, pressing the "Transmit" button on the Audio Control Panel or by pressing the foot-operated transmit switch.

**Instant Transmit**

The operator may transmit over a non-selected channel to give a brief reply without changing channel selection.

**Last-Call Transmit**

The operator may transmit to the last channel who called by pressing a single button.

**Simul-Select**

The operator can concurrently select multiple channels so that one transmission can be broadcast on several channels at once. Stored Group-Selects may be called by menu to select predetermined groups of channels.

**Alert**

Up to four different alert tones may be transmitted. These tones may be used to indicate the type or priority of the dispatch to follow.

**Patch**

Channels may be patched to other channels or telephone lines to allow field units to converse with those not normally available. Once set up, the operator may monitor the patch while continuing to operate on other channels. Multiple patches may be invoked at one time via the Patch Menu using the optional Patch Card in the common controller.

**Level Meter**

The bar-graph level meter on the Audio Control Panel shows the level of the transmitted voice. This helps operators to speak at the proper level during transmissions. The meter also indicates when call activity is present on the Selected channel.

**24-Hour Clock**

All clock displays of the entire Series 4000 System are synchronized and are placed in main viewing areas. Synchronization to an external source or time standard is also available.

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See Zetron price list for option pricing. Specifications subject to change without notice. Literature number: 005-0623F March 1998

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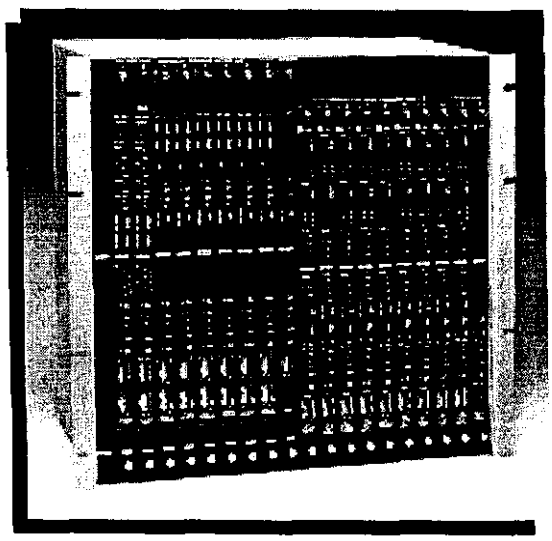
PRELIMINARY

# MODEL 4020

## Series 4000 Communications Control System



## FEATURES

- **Up to 20 channels and 6 Operating Positions**
- **Compatible with all Series 4000 Video and Button Consoles (not including M4010)**
- **No Single Point of Failure Architecture**
  - **Dual Redundant Control Bus**
  - **Optional Dual Redundant System Controllers**
  - **Optional Dual Redundant Power Supplies**
- **Economical Upgrade Path to Larger Capacity Model 4048 Common Controller**
- **Up to 10 Independent Cross Channel Patches with Patch Card**
- **Optional "Channel Check" Provides 4 Minute/ Channel Instant Recall Recorder with Universal or Tone/Local Dual Channel Cards**
- **Optional Radio System Management Software**
- **Provisions for External Time Reference (Net Clock or IRIG B)**

## SYSTEM OVERVIEW

The Model 4020 is a twenty channel Common Controller that supports up to six Series 4000 operating positions including the M4217NT dispatch workstation, M4217B video console, M4118 rack mount button console, and the Model 4018 desktop button console. The architecture and feature set of the Model 4020 are essentially identical to that of the proven Model 4048. The differences between the two are limited to the capacity of the card cages, power supply(s), and patch card.

A complete Model 4020 Common Controller is comprised of a single card cage and:

- One or two System Traffic Cards (STC)
- One to six Console Interface Cards (CIC)
- Up to ten Dual Channel (DCC T/R Control) and Auxiliary I/O Cards (limited to a total of ten cards, e.g. nine DCC and one Aux I/O)
- One 10 channel Patch Card
- A built-in 120/240 VAC power supply, or external rack mounted AC/DC power supplies (identical to those used for M4048)

### Designed for Reliability

The Model 4020 comes standard with a dual redundant system bus. The unit may be optionally provisioned with dual redundant System Traffic Cards and Power Supplies. In the unlikely event of a failure of either of these critical subsystems, the remaining STC or power supply continues to support normal operation of the console system.

### Designed for Economical Upgrade

The Model 4020 may be quickly and economically upgraded to a 48 channel, 16 position Model 4048 Common Controller if greater capacity is required.

Both Common Controllers utilize the same plug-in cards (except for the patch card) and feature identical connectors and pin-outs for connection to radios, console operating positions, and other peripherals in the dispatch center.

As a result, the upgrade is as simple as replacing the Model 4020 card cage, power supply, and patch card with Model 4048 components. The balance of the cards are moved to the new card cages, cables transferred, and the first stage of the upgrade is complete. If additional channel cards are added, some reprogramming of the operating positions will be required.

### Designed for Enhanced Maintainability

Given the Model 4048's enviable record for reliability, problems with the Model 4020 can be expected to be far and few between. Nonetheless, on those rare occasions when a minor difficulty does occur, technicians will appreciate the 4020's "designed-in" maintainability including:

- RS-232 diagnostic port sends a record of all system events to a logging printer
- Dial-up port for remote diagnostics
- "Hot-swappable" power supplies (with dual M4048 supplies)
- Each card features LED's for status indications, manual reset buttons, and power/signal test points.

### Designed for Enhanced Functionality

The Model 4020 features a Radio System Management Port, which provides console event data in an RS-232 format. When connected to a separate PC running Zetron's optional Radio System Management Program, operational statistics related to console and channel usage are easily viewed, printed, and analyzed.

To ensure clock synchronization with other equipment in the dispatch center, the M4020 comes standard with an RS-232 port for interfacing with industry time standards. Additionally, IRIG B interfaces are standard on each Auxiliary I/O Card.

## SPECIFICATIONS

**TRANSMIT ELECTRICAL SPECIFICATIONS**

| | |
|---|---|
| Audio Output | +10dBm max. into 600-ohm line |
| Output Impedance | Transmit: 600 ohm balanced. Idle: 600 or 3500 ohms |
| Distortion | <2% at full output. Hum, Cross-Talk all 50 dB at full output |
| Frequency Response | -3 to +1dB from 300-3000 Hz except guard tone notch |
| Compression | Input level increase of 30 dB above knee of compression causes <3 dB output increase |

**RECEIVE ELECTRICAL SPECIFICATIONS**

| | |
|---|---|
| Input Impedance | 600 or 10K ohm (4-wire). 3500 ohm (2-wire) |
| Line Balance | 66 dB at 1000 Hz |
| Rx Sensitivity | -30 dBm max. at knee of compression; adjustable |
| Frequency Response | -3 to 1 dB from 250-5000 Hz except guard tone notch |
| Compression | Input level increase of 30 dB above knee of compression causes <3 dB output increase |
| Distortion | <2% |

**PHYSICAL SPECIFICATIONS** (H x W x D)

| | |
|---|---|
| Card Cage | 17.5" x 19 x 9.75" |

**OTHER ELECTRICAL SPECIFICATIONS**

| | |
|---|---|
| Capacity | 20 Channels<br>6 Operating Positions |
| Console Interface | 3 audio pairs (Select, Unselect, MIC) and 2 data (RS-422 @ 1200, 9600, or 19.2 kBaud) |
| Channel Interface | 2-wire simplex/half-duplex or 4-wire half/full-duplex |
| Channel Control | Local, E & M, Tone Remote, DC Remote, Telephone (end-to-end), and selected trunking radio protocols |
| DC Control* | Programmable for +/-2.5, 5.5, 6.0, 11, 12.5, and 15.5 mA. Operable up to 8K ohm loop resistance. Accuracy +/-.25mA |
| Tone Control | 15 standard tones supported, programmable (no trimmer adjustment) 650-2050Hz. High Level Guard Tone duration 120-600 msec. Function Tone Duration 40 msec. Guard Tone Freq. 2175 Hz, alterable. Tone freq. accuracy +/- 0.2%; timing accuracy +/-1.0 |
| Local Control | PTT normally open relay contact rated 1.0 A at 24 VAC/DC |
| E & M Control | Tx control via PTT relay, external 48V required |
| Trunking Control | Ericsson EDACS® (Orion), Motorola iDEN®, MAP27 |
| Busy Chan. Detect | Local Cross-Busy detection; Guard Tone or DC Control detection (LOTL) |
| Time Synch | IRIG-B (with Aux I/O Card)<br>RS-232 (1200, 2400, 9600, 19.2 kBaud) |
| Radio Management Port | RS-232 (1200, 2400, 9600, 19.2 kBaud) |
| Logger Port | RS-232 (1200, 2400, 9600, 19.2 kBaud) |
| Modem Port | RS-232 (1200, 2400, 9600, 19.2 kBaud) |
| Recorder Outputs | 1 per channel (Tx/Rx audio summation), plus 1 output per console. 0 dBm level, 600 ohm single ended |
| Power Input | 95-240 VAC, 2 amps<br>50 - 60 Hz<br>150 Watts maximum |
| Approvals | FCC part 15 |

**Standard power supply supports up to 5 simultaneously keyed DC remote channels when M4020 card cage is fully populated. For greater DC remote capacity, select M4048 power supply.*



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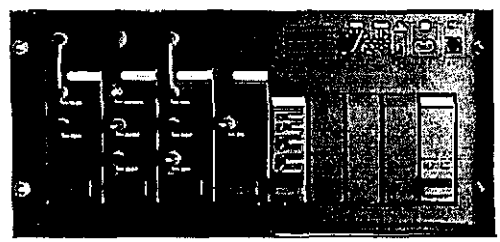
See Zetron price list for option pricing. Specifications subject to change without notice. Literature number: 005-1236A March 2000

# Conventional
# MASTR® III Stations VHF, UHF, 800 MHz

*The MASTR III, built on the tradition of the popular MASTR series of repeaters, is an industry leader in performance, flexibility, and reliability. The MASTR III provides innovations such as fully shielded and removable modules, front-mounted controls, and remote diagnostics. The MASTR III features the latest in digital signal processing technology, which provides a comprehensive array of control capabilities for system design flexibility.*



## Product Overview

The MASTR III provides the flexibility to change system setup as necessary. Whether users are designing a system, programming radio functions, or arranging an installation site, MASTR III keeps pace with their needs.

### Flexible, Efficient Design

The microprocessor-controlled, PC programmable options provide flexibility, simplified setup, and easy field upgrades. The fully synthesized design of the MASTR III Base Station allows the user to make frequency changes quickly, easily, and affordably. In addition, the MASTR III operates on both wideband (25 kHz) and narrowband (12.5 kHz) channels.

The modular design of the MASTR III Base Station makes maintenance and servicing simple and fast. Each module furnishes easy-to-read indications of proper operation.

A 69-inch cabinet houses three stations or ancillary equipment. The cabinet design also increases reliability through its cooling capacity for the equipment housed within it.

MASTR III also features optional Aegis™ digital or Voice Guard® encryption with the addition of a digital control shelf.

### Backward Compatible

The MASTR III Base Station can be used in combination with MASTR II or IIe stations. The MASTR III is readily upgradable through software revisions.

### For More Information

For more information about this or any other Com-Net Ericsson Critical Radio Systems product, call 1-800-431-2345 in the U.S. From outside the U.S. call +1-804-592-6100.

ComNet Ericsson
CRITICAL RADIO SYSTEMS

## Conventional Options and Accessories

### Programmable Options

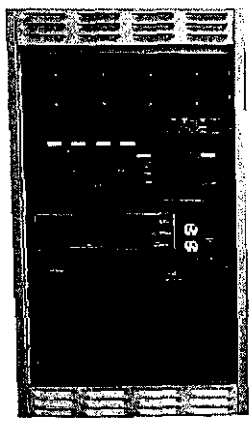
- Transmit Frequencies
- Receive Frequencies
- Channel Guard Digital and Tone
- Channel Guard Disable
- Repeater Disable
- Intercom Function
- Type 90
- DTMF Decode
- Morse Code ID
- Squelch Tail Elimination (STE)
- Carrier Control Timer
- Station Control
- DC Control
- Tone Control
- Repeater
- DC/Repeat
- Tone/Repeat
- 2- or 4-Wire Audio
- Scan

### Additional Options

- Service Microphone
- Antenna Multicoupler
- 50 Hz Power Supply
- Duplexer
- Antenna Relay (VHF/UHF)
- Combiner
- Isolator
- Squelch-Operated Relay
- Remote Controllers
- Battery Standby (VHF/UHF)
- Battery Charger (VHF/UHF)
- Gel Cell Battery (VHF/UHF)
- Voice Guard Encryption
- Aegis Digital
- Switchable Channel Spacing

## Conventional Tone and DC Remote Controlled Stations

| | |
|---|---|
| Audio (Line to Transmitter) | |
| Line Terminating Impedance: | 600 Ω |
| Line Level (Adjustable): | -20 to +7 dBm |
| Frequency Response: | ±3 dB @ 300-3000 Hz |
| Tone Control | |
| Function Tones: | 1050,1150,1250,1350,1450, 1550,1650, 1750,1850,1950 and 2050 Hz |
| Secur-it Tone and Transmit Tone: | 2175 Hz |
| Transmitted 2175 Hz Tone Level: | 20 dB Below Voice |
| Permissible Control Line Loss @2175 Hz: | 30 dB |
| Audio (Receiver to Line) | |
| Audio Amplifier Input Impedance: | 10 KΩ |
| Input Level: | 1 V RMS (for 5 kHz Deviation) |
| Output Impedance to Line: | 600 Ω |
| Output Level to Line Voice (1 kHz ref): | +7 dBm (Adjustable) |
| Tone (1 kHz ref): | +7 dBm (Reference 7 dBm) |
| Frequency Response: | +1 and -3 dB @ 300-3000 Hz |
| Hum and Noise, Noise Squelch: | -55 dB (Reference 7 dBm) |
| Tone Squelch: | -30 dB (Reference 7 dBm) |
| DC Control Control Currents: | -2.5, ±6, and ±11 mA |
| Line Loop Resistance (maximum): | 11 KΩ (Includes 3K Termination) |



One Conventional Channel

## Regulatory Data

| Frequency Range (MHz) | Power Output (Adjustable) (W) | FCC Type Acceptance Number | Applicable FCC Rules | Industry Canada Certification Number | Applicable Industry Canada Rules | CE Marking |
|---|---|---|---|---|---|---|
| 136-150.8 | 55-110 | AXATR-197-A2 | 22, 90, 80, 74 | TR-197 | RSS-119 | All VHF and UHF |
| 150.8-174 | 55-110 | AXATR-197-A2 | 22, 90, 80, 74 | TR-197 | RSS-119 | bandsplits meet |
| 403-430 | 45-90 | AXATR-307-A | 90 | TR-307 | RSS-119 | the following: |
| 425-450 | 45-90 | AXATR-307-A2 | 90 | TR-307 | RSS-119 | ETS 300 086 |
| 450-470 | 50-100 | AXATR-307-B2 | 22, 90, 80, 74 | TR-307 | RSS-119 | ETS 300 219 |
| 470-494 | 45-90 | AXATR-307-C2 | 90 | N/A | N/A | ETS 300 113 |
| 492-512 | 45-90 | AXATR-307-D2 | 90 | N/A | N/A | |
| 800 | 10-100 | AXATR-307-A2 | 90 | TR-329 | RSS-119 | N/A |

Technical specifications are subject to change. This product is subject to U.S. export control for national security reasons.

## General Specifications

| Cabinet | INDOOR CABINET (Floor Mount) 37 inches (CNV) | 69 inches |
|---|---|---|
| Size [in. (mm)] | | |
| Height | 37.0 (940) | 69.1 (1750) |
| Width | 21.5 (550) | 23.1 (590) |
| Depth | 18.25 (460) | 21.0 (533) |
| Weight (min) [(lb (kg)] | | |
| Continuous Duty | 150 (68) | 520 (236) |
| Packed, Domestic Shipping | 165 (75) | 550 (250) |
| Number of Rack Units | 17 | 33 |
| Max. Units w/Power Supply | 1 | 3 |
| w/o Power Supply | 1 | 4 |

NOTE: One rack unit equals 1.75 inches. Stations occupy 8 rack units of cabinet space.

| | |
|---|---|
| **Service Speaker:** | 1W @ 8Ω |
| **Service Microphone:** | Transistorized Dynamic |
| **Duty Cycle (EIA) Continuous:** | Transmit/Receive - 100% |
| **Ambient Temperature (or full spec performance per EIA):** | -22 to +140°F (-30 to +60°C) |
| **Humidity (EIA):** | 90% @ 122°F (50°C) |
| **Input Power Source:** | 120 VAC (±20%) |
| **Optional Input Power Source:** | 230 VAC (±15%), 50 Hz |
| **Standby Battery Source:** | 13.8 VDC, 100 AH (min.) |
| **Antenna Connections:** | Type N |
| **Length of AC Power Cable:** | 10 ft (3048 mm) |
| **Metering:** | Provided through Handset or TQ0619 Utility Software |
| **Altitude:** | |
| **Operable:** | Up to 15,000 ft (4,570 m) |
| **Shippable:** | Up to 50,000 ft (15,250 m) |
| **Mean Time Between Failure (MTBF)** | 11,227 hours |

| Source Power Drain | | VHF | | UHF | | | | | 800 |
|---|---|---|---|---|---|---|---|---|---|
| **Frequency Range (MHz)** | | 136-150.8 | 150.8-174 | 403-430 | 425-450 | 450-470 | 470-494 | 492-512 | 851-870 Tx<br>806-825 Rx |
| **AC Input Power** | | 5A @ 120 VAC or 3A @ 230 VAC | | | | | | | |
| **DC Input Power (A)** | VDC | | | | | | | | |
| **Tx (full/half power)** | 13.8 | 33/25 | 33/25 | 33/25 | 33/25 | 33/25 | 33/25 | 33/25 | 2/2 |
| **Rx only** | 13.8 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| **Tx (full/half power)** | 26.4 | | | | | | | | 12/8 |
| **Rx only** | 26.4 | | | | | | | | 0.5 |
| **EDACS Applications** | 13.8 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |

## Transmitter

| | VHF | | UHF | | | | | 800 |
|---|---|---|---|---|---|---|---|---|
| **Frequency Range (MHz)** | 136-150.8 | 150.8-174 | 403-430 | 425-450 | 450-470 | 470-494 | 494-512 | 851-870 |
| **Rated Power Output (W)** | 110 | 110 | 90 | 90 | 100 | 90 | 90 | 100 |
| **RF Output Impedance (Ω)** | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| **Conducted Spurious and Harmonic Emission (dBm)** | -36 | -36 | -36 | -36 | -36 | -36 | -36 | -36 |
| **Frequency Stability (ppm)** | ±1.5 | ±1.5 | ±1.0 | ±1.0 | ±1.0 | ±1.0 | ±1.0 | ±1.0 |
| **Modulation Deviation (kHz)** | | | | | | | | |
| **Wideband** | 0 to ±5 | 0 to ±5 | 0 to ±5 | 0 to ±5 | 0 to ±5 | 0 to ±5 | 0 to ±5 | 0 to ±5 |
| **15K0F1D, 15K0F1E** | | | | | | | | |
| **16K0F1D, 16K0F1E, 16K0F3E** | | | | | | | | |
| **Narrowband** | 0 to ±2.5 | 0 to ±2.5 | | | 0 to ±2.5 | | | |
| **11K0F3E** | | | | | | | | |
| **NPSPAC** | | | | | | | | 0 to ±5 |
| **14K0F3E** | | | | | | | | |
| **FM Noise (dB)** | -55 | -55 | -55 | -55 | -55 | -55 | -55 | -55 |
| **Channel Spacing (kHz)** | 12.5/25/30 | 12.5/25/30 | 12.5/25 | 12.5/25 | 12.5/25 | 12.5/25 | 12.5/25 | 25<br>12.5 (NPSPAC) |
| **Frequency Spread Full Spec (MHz)** | 8 | 12 | 27 | 25 | 20 | 24 | 20 | 1.0 |

**Audio Distortion (@ 1 kHz):** Less than 3%
**Number of Channels (Conventional):** Up to 16
**Audio Response (pre-emphasis):** Within +1/-3 dB of 6 dB/octave, 300 to 3000 Hz per EIA
**NOTE:** Rated power output is measured at the transmitter power amplifier output connector per FCC Type Acceptance filing information. Any customer-required optional items such as power measuring devices and/or duplexers will introduce loss between the transmitter output connector and the station cabinet output connector. This loss will reduce the available power at the station connector.

## Receiver

| | VHF | | UHF | | | | | 800 |
|---|---|---|---|---|---|---|---|---|
| **Frequency Range (MHz)** | 136-150.8 | 150.8-174 | 403-430 | 425-450 | 450-470 | 470-494 | 492-512 | 806-825 |
| **RF Input Impedance (Ω)** | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| **Channel Spacing (kHz)** | 12.5/25/30 | 12.5/25/30 | 12.5/25 | 12.5/25 | 12.5/25 | 12.5/25 | 12.5/25 | 25<br>12.5 (NPSPAC) |
| **Sensitivity (dBm) EIA 12 dB SINAD** | -116 (0.35 µV) | -116 (0.35 µV) | -116 (0.35 µV) | -116 (0.35 µV) | -116 (0.35 µV) | -116 (0.35 µV) | -116 (0.35 µV) | -119 (0.25 µV) |
| **Threshold Squelch (dBm)** | -119 (0.25 µV) | -119 (0.25 µV) | -119 (0.25 µV) | -119 (0.25 µV) | -119 (0.25 µV) | -119 (0.25 µV) | -119 (0.25 µV) | -122 (0.18 µV) |
| **Selectivity EIA 2-Signal (dB)** | | | | | | | | |
| **12.5 kHz** | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 20 (NPSPAC) |
| **25 kHz** | 95 | 95 | 90 | 90 | 90 | 90 | 90 | 90 |
| **30 kHz** | 100 | 100 | | | | | | |
| **Frequency Stability (ppm)** | ±1.5 | ±1.5 | ±1.0 | ±1.0 | ±1.0 | ±1.0 | ±1.0 | ±1.0 |
| **Signal Displacement Bandwidth (kHz)** | ±2 | ±2 | ±2 | ±2 | ±2 | ±2 | ±2 | ±2 |
| **Intermodulation (dB)** | | | | | | | | |
| **12.5 kHz** | 75 | 75 | 75 | 75 | 75 | 75 | 75 | |
| **25 kHz** | 90 | 90 | 85 | 85 | 85 | 85 | 85 | 85 |
| **30 kHz** | 90 | 90 | | | | | | |
| **Spurious and Image Rejection (dB)** | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Frequency Spread** | | | | | | | | |
| **Full Specs. (MHz)** | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 1.5 |
| **3 dB Degradation in Sensitivity (MHz)** | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | N/A |

**Audio Response (de-emphasis):** Within +2/-8 dB of 6 dB/octave (@ Local Speaker), 300 to 3000 Hz per EIA
Within +1/-3 dB of 6 dB/octave (@ Line Output), 300 to 3000 Hz per EIA
**Audio Output:** 1 Watt at less than 3% distortion @ 1000 Hz, 25/30 kHz Channel

**Com-Net Ericsson Critical Radio Systems, Inc.**
P. O. Box 2000
Lynchburg, Virginia 24501
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+1-804-592-6100
www.com-netericsson.com

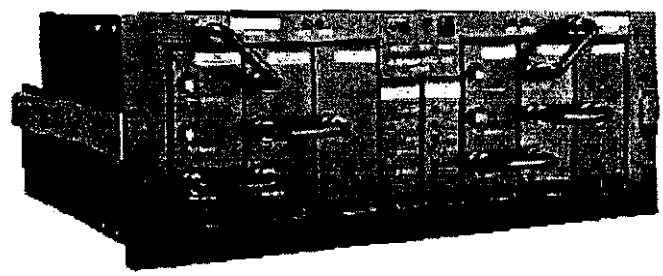
ECR-5778C



3/00 Printed in U.S.A.

# Conventional
# MASTR® III Auxiliary Receiver VHF, UHF, 800 MHz

*The MASTR III Auxiliary Receiver provides a receive-only configuration of the MASTR III product family for use as a second receiver or for use in a voted system. The MASTR III Auxiliary Receiver is available for analog as well as Aegis™ systems.*



## Product Overview

### Feature Advantages

The MASTR III Auxiliary Receiver is a fully synthesized receiver, thus eliminating the need for crystals and providing multi-channel capability. In addition, the MASTR III Auxiliary Receiver is programmable, which provides greater flexibility in meeting customized requirements. MASTR III receivers have the capability to operate with both wideband (25 kHz) and narrowband (12.5 kHz) channels.

Other MASTR III Auxiliary Receiver features include programmable Channel Guard monitoring, control channel option, and remote programming capabilities.

The MASTR III Auxiliary Receiver utilizes the same receiver and control modules included with the MASTR III Base Station. These components provide the same reliability, superior specifications, and flexibility on the MASTR III Auxiliary Receiver that they demonstrate on the MASTR III Base Station.

### For More Information

For more information about this or any other Com-Net Ericsson Critical Radio Systems product, call 1-800-431-2345 in the U.S. From outside the U.S. call +1-804-592-6100.

ComNet Ericsson
CRITICAL RADIO SYSTEMS

## General Specifications

Panel Dimensions:
- 4 Rack Units - Up to 2 Receivers
- Height:7.0 in. (178 mm)
- Width: 19.0 in. (483 mm)

Ambient Temperature
(or full spec performance per EIA):
- -22 to +140°F
- (-30 to +60°C)

Humidity (EIA):
- 90% @ 122°F (50°C)

Service Speaker:
- 2W @ 8Ω

Line Output:

| | |
|---|---|
| Power Level: | -19 to +6dBm |
| Interface: | 2 Wire |
| Termination Imp.: | 600Ω |

Rack Capacity:

| Cabinet, in. | No. of Receivers |
|---|---|
| 69 | 8 |
| 83 | 10 |
| 86 (open rack) | 10 |

| | |
|---|---|
| Source Power*: | Conventional |
| AC Input Power: | 120 VAC ± 20%, 60 Hz |
| | 1.25A |
| | 230 VAC ± 15%, 50 Hz |
| | 0.7A |
| DC Input Power: | 13.8 VDC ± 20% |
| | 2.5A |
| | 11.0 VDC ± 20% |
| | 3.0A |

*One shelf, two receivers

## Receiver Specifications

| | VHF | | UHF | | | | | | 800 |
|---|---|---|---|---|---|---|---|---|---|
| FREQUENCY RANGE (MHz): | 136-150.8 | 150.8-174 | 380-400 | 403-430 | 425-450 | 450-470 | 470-494 | 492-512 | 806-825 |
| RF INPUT IMPEDANCE (Ω): | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| CHANNEL SPACING (kHz): | 12.5/25/30 | 12.5/25/30 | 12.5/25 | 12.5/25 | 12.5/25 | 12.5/25 | 12.5/25 | 12.5/25 | 25 (NPSPAC) |
| SENSITIVITY (dBm) EIA 12 dB SINAD: | -116 (0.35 µV) | -116 (0.35 µV) | -115 (0.40 µV) | -116 (0.35 µV) | -116 (0.35 µV) | -116 (0.35 µV) | -116 (0.35 µV) | -116 (0.35 µV) | -119 (0.25 µV) |
| Threshold Squelch (dBm): | -119 (0.25 µV) | -119 (0.25 µV) | -118 (0.28 µV) | -119 (0.25 µV) | -119 (0.25 µV) | -119 (0.25 µV) | -119 (0.25 µV) | -119 (0.25 µV) | -122 (0.18 µV) |
| SELECTIVITY EIA 2-Signal (dB) | | | | | | | | | |
| 12.5 kHz: | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 70 |
| 25 kHz: | 95 | 95 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| 30 kHz: | 100 | 100 | | | | | | | |
| FREQUENCY STABILITY (ppm): | ±1.5 | ±1.5 | ±1.0 | ±1.0 | ±1.0 | ±1.0 | ±1.0 | ±1.0 | ±1.0 |
| SIGNAL DISPLACEMENT BANDWIDTH (kHz): | ±2 | ±2 | ±2 | ±2 | ±2 | ±2 | ±2 | ±2 | ±2 |
| INTERMODULATION (dB) | | | | | | | | | |
| 12.5 kHz: | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | |
| 25 kHz: | 90 | 90 | 85 | 85 | 85 | 85 | 85 | 85 | 85 |
| 30 kHz: | 90 | 90 | | | | | | | |
| SPURIOUS & IMAGE REJECTION (dB): | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| FREQUENCY SPREAD | | | | | | | | | |
| Full Specs. (MHz): | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 1.5 |
| 3 dB Degradation in Sensitivity (MHz): | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | N/A |

Audio Response (de-emphasis): Within +2 and -8 dB of 6 dB/octave (@ Local Speaker), 300 to 3000 Hz per EIA/TIA
Within +1 and -3 dB of 6 dB/octave (@ Line Output), 300 to 3000 Hz per EIA/TIA

Audio Output: 1 Watt at less than 3% distortion @ 1000 Hz, 25/30 kHz Channel

## Regulatory Data

| Frequency Range | FCC Type Acceptance Number | Applicable FCC Rules | Industry Canada Certification Number | Applicable Industry Canada Rules |
|---|---|---|---|---|
| 136-150.8 | AXAER-160-A | 15 | ER-160 | RSS-119 |
| 150.8-174 | AXAER-160-A | 15 | ER-160 | RSS-119 |
| 403-430 | AXAER-161-A | 15 | ER-161 | RSS-119 |
| 425-450 | AXAER-161-A | 15 | ER-161 | RSS-119 |
| 450-470 | AXAER-161-A | 15 | ER-161 | RSS-119 |
| 470-494 | AXAER-161-A | 15 | N/A | RSS-119 |
| 492-512 | AXAER-161-A | 15 | N/A | RSS-119 |
| 800 | AXAER-162-A | 15 | ER-162 | RSS-119 |

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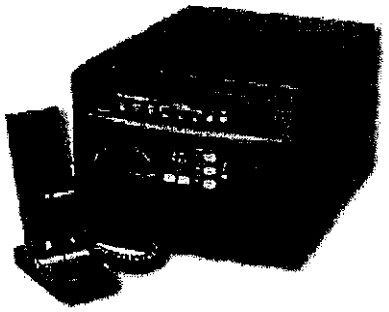
ECR-5775C

5/00 Printed in U.S.A.

# GR1225 Repeater



You can have X-Pand and all the advantages of a Motorola Repeater with the GR1225. With 16 programmable channels, you can talk on either a 25 or a 12.5 kHz channel allowing a seamless, economical transition to the narrower bandwidth. Two-way users won't want to be without this greatly expanded audio quality at 12.5 kHz. The GR1225 makes a perfect complement to the 1225 Series Two-Way Radios.

**"Sounds good to me."**

**X-PAND**
**12.5 or 25 kHz**


Compresses your voice at one end.
Expands it at the other.
Significantly reduces noise level in the process.

Features + Benefits | Where To Buy | Applications | Accessories | Specs

# GR1225 Repeater

***Technical Specifications***

***General - Transmitter - Receiver***

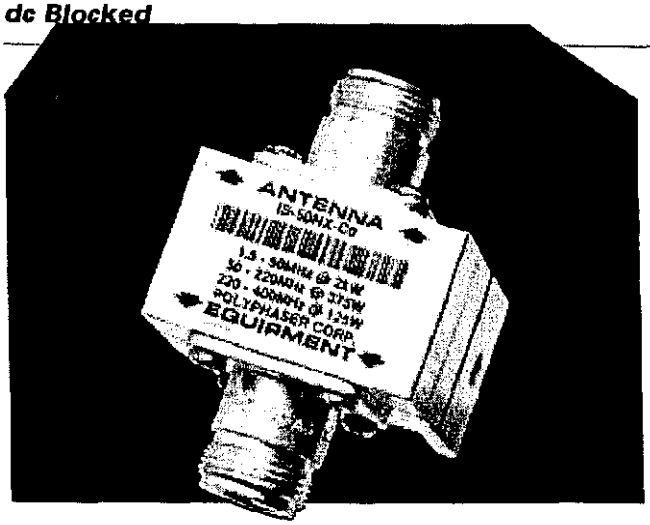
| General | | |
|---|---|---|
| | **VHF** | **UHF** |
| **Model Series** | H5158 or M43GRC | H5157 or M44GRC |
| **Frequency Bandwidth** | 146-174 MHz | 444-474 MHz |
| **Channel Spacing** | Switchable 12.5/20/25/30 kHz | |
| **Frequency Separation** | 28 MHz | 30 MHz |
| **Channel Capacity** | 16 Channels | |
| **Dimensions** | 8"H x 10"W x 14"D (203 x 254 x 356 mm) | |
| **Weight** | 35 lbs. (15.9 Kilos) | |
| **Duty Cycle** | Continuous @25W<br>50% @45/50W (5 min. on/5 min. standby) | |
| **Input Voltage:**<br><br>**Repeater**<br>**Transceiver** | <br><br>115/230 Vac+/- 10%<br>13.8 Vdc +/- 10% | |
| **Input Current:**<br><br>**Repeater**<br><br>**Transceiver (13.8Vdc):**<br>**Standby**<br>**RX@7.5W**<br>**TX@50/45W** | <br><br>2.6 Aac (maximum) @115 Vac<br>1.3 Aac (maximum) @230 Vac<br><br><br>0.45 Adc<br>1.5 Adc<br>14.0 Adc | <br><br><br><br><br><br><br>12.5 Adc |
| **Squelch Code Capabilities** | TPL/DPL/CSQ | |

| Transmitter | | |
|---|---|---|
| | **VHF** | **UHF** |
| **RF Output** | 25-50W | 25-45W |
| **Frequency Stability**<br><br>**(-30C to +60C)** | ±2.5 ppm | ±1.5 ppm |
| **Spurs / Harmonics** | -23 dBm | |
| **Audio Response** | +1/-3 dB<br>(From a 6 dB/Oct. Pre-emphasis 300 to 3000 Hz) | |
| **Audio Distortion** | <3% EIA<br>(@1000 Hz 60% rated Maximum Deviation) | |

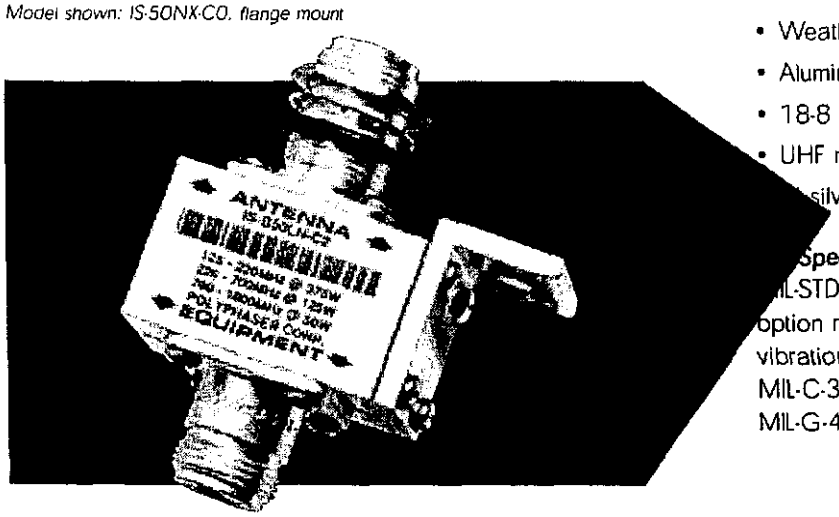
| | | | | |
|---|---|---|---|---|
| **Modulation Sensitivity** | 80 mV (rms for 60% deviation @1000 Hz | | | |
| **FM Noise** | 12.5 kHz -40 dB<br>20/25/30 kHz -45 dB | | | |
| **FM Modulation** | 11K0F3E<br>16K0F3E | | | |
| **FCC Designation** | ABZ99FT3023 | | ABZ99FT4023 | |
| **Receiver** | | | | |
| | **VHF** | | **UHF** | |
| **Sensitivity (-12dB SINAD)** | .35 µV (-116.1 dBm) | | | |
| **Internal Squelch (SINAD)** | 10 dB nominal setting; Adjustable from off to 20 dB | | | |
| **Selectivity** | 12.5 kHz -75 dB | 20/25/30 kHz -85 dB | 12.5 kHz -70 dB | 20/25/30 kHz -80 dB |
| **Intermodulation** | -80 dB | | | |
| **Usable Bandwidth** | 1.2 kHz | 2.0 kHz | 1.2 kHz | 2.0 kHz |
| **Spur Rejection** | -85 dB | | | |
| **Image Rejection** | -80 dB | | | |
| **Audio Output**<br><br>**Internal Speaker**<br>**External Speaker** | <br><br>3 Watts<br>7.5 Watts with 8 Ohm Speaker | | | |
| **Audio Response** | +1/-3 dB<br>(From a 6 dB/Oct. Pre-emphasis 300 to 3000 Hz) | | | |
| **Input Impedance** | 50 Ohms | | | |

*Typical Specifications. All measurements per TIA/EIA-603.

## dc Blocked




*Model shown: IS-50NX-C0, flange mount*




*Model shown: IS-B50LN-C2, bulkhead mount*

### BROADBAND HF/VHF/UHF COAXIAL PROTECTORS

*APPLICATION:*

For general radio use; surface or bulkhead mountable options, NOT where transmitter combining is performed.

- Utilizes UL497B listed gas tube
- Models from 1.5MHz to 1000MHz
- Multi-strike capability
- Low strike throughput energy
- Flange mount and bulkhead mount options
- Not weather resistant
- Weatherize using WK-1 *(see page 54)*
- Aluminum enclosure
- 18-8 stainless steel hardware
- UHF nickel shell silver center, TFE
- silver shell and gold center pin

**Specs:** Meets 6' all angle drop test, Op to 70,000', MIL-STD-202, 170F Cond. B -65°C to 125°C, rainproof option meets many Mil specs under 202 and 810 for vibration, shock (both), fungus, etc. UHF & N connectors MIL-C-39012, QQ-S-365, QQ-B-626, QQ-C-530 and MIL-G-45204, follows MIL-STD-454J, Solder QQ-S-571 Sn62

**SPECIFICATIONS:**

*Surge:* 50kA IEC 1000-4-5 8/20µs waveform 500 Joules

*Turn-on:* 600Vdc ±20% 2.5ns for 2kV/ns L models
1200Vdc ±20% 7ns for 2kV/ns H models

*VSWR:*
-C0: 1.5 to 2MHz is 1.2 to 1 & 2 to 400MHz is 1.1 to 1
-C1: 50 to 60MHz is 1.2 to 1 & 60 to 700MHz is 1.1 to 1
-C2: 125 to 100MHz is ≤1.1 to 1 type N,
≤1.2 to 1 type F & UHF

*Insertion Loss:* ≤0.1dB over frequency range

*Temperature:* -45°C to +85°C Storage/Operating +50°C

*Vibration:* 1G up to 100Hz

**ORDER INFORMATION:** (Female)

**IS-B50LU-C0** Throughput Energy: ≤10mJ* (UHF Connector/Bulkhead)
Frequency Range: 1.5MHz to 400MHz
Max. Power: HF 2kW, VHF 375W, UHF 125W

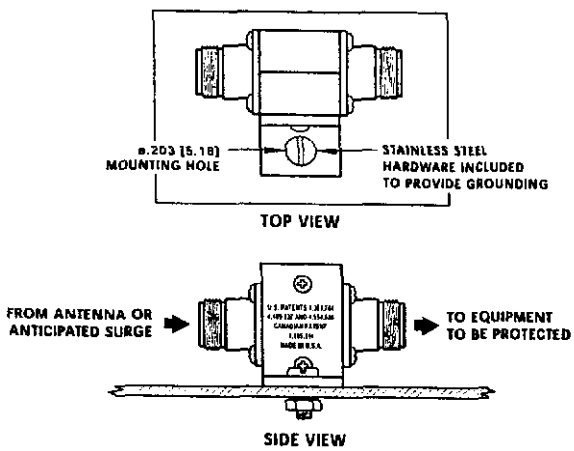
**IS-B50HU-C0** Throughput Energy: ≤20mJ* (UHF Connector/Bulkhead)
Frequency Range: 1.5MHz to 400MHz
Max. Power: HF 3kW, VHF 500W, UHF 250W

**IS-B50LU-C1** Throughput Energy: ≤600µJ* (UHF Connector/Bulkhead)
Frequency Range: 50MHz to 700MHz
Max. Power: VHF 375W, UHF 125W

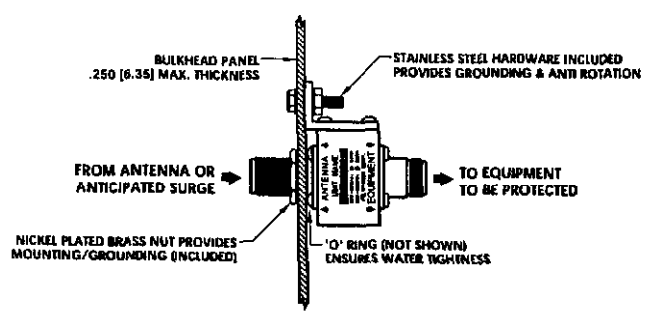
**IS-B50HU-C1** Throughput Energy: ≤1mJ* (UHF Connector/Bulkhead)
Frequency Range: 50MHz to 700MHz
Max. Power: VHF 500W, UHF 250W

**IS-B50LN-C0** Throughput Energy: ≤10mJ* (N Connector/Bulkhead)
Frequency Range: 1.5MHz to 400MHz
Max. Power: HF 2kW, VHF 375W, UHF 125W

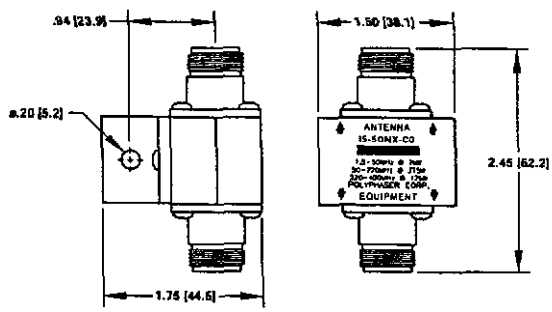
## dc Blocked



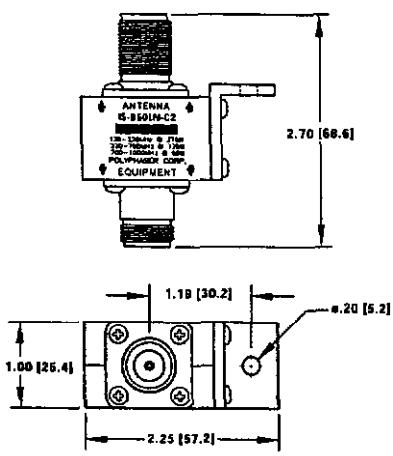

*Mounting Configuration: flange mount models*




*Mounting Configuration: bulkhead mount models*




*Product Dimensions: IS-50NX-C0, flange mount*




*Product Dimensions: IS-B50LN-C2, bulkhead mount*

***IS-B50HN-C0*** Throughput Energy: ≤20mJ* (N Connector/Bulkhead)
Frequency Range: 1.5MHz to 400MHz
Max. Power: HF 3kW, VHF 500W, UHF 250W

***IS-B50LN-C1*** Throughput Energy: ≤600µJ* (N Connector/Bulkhead)
Frequency Range: 50MHz to 700MHz
Max. Power: VHF 375W, UHF 125W

***IS-B50HN-C1*** Throughput Energy: ≤1mJ* (N Connector/Bulkhead)
Frequency Range: 50MHz to 700MHz
Max. Power: VHF 500W, UHF 250W

***IS-B50LN-C2*** Throughput Energy: ≤220µJ* (N Connector/Bulkhead)
Frequency Range: 125MHz to 1000MHz
Max. Power: VHF 375W, UHF (low) 125W
800MHz to 1GHz 50W

***IS-B50HN-C2*** Throughput Energy: ≤800µJ* (N Connector/Bulkhead)
Frequency Range: 125MHz to 1000MHz
Max. Power: VHF 500W, UHF (low) 250W
800MHz to 1GHz 125W

***IS-50UX-C0*** Throughput Energy: ≤10mJ* (UHF Connector/Surface)
Frequency Range: 1.5MHz to 400MHz
Max. Power: HF 2kW, VHF 375W, UHF 125W

***IS-50UX-C1*** Throughput Energy: ≤600µJ* (UHF Connector/Surface)
Frequency Range: 50MHz to 700MHz
Max. Power: VHF 375W, UHF 125W

***IS-50NX-C0*** Throughput Energy: ≤10mJ* (N Connector/Surface)
Frequency Range: 1.5MHz to 400MHz
Max. Power: HF 2kW, VHF 375W, UHF 125W

***IS-50NX-C1*** Throughput Energy: ≤600µJ* (N Connector/Surface)
Frequency Range: 50MHz to 700MHz
Max. Power: VHF 375W, UHF 125W

***IS-50NX-C2*** Throughput Energy: ≤220µJ* (N Connector/Surface)
Frequency Range: 125MHz to 1000MHz
Max. Power: VHF 375W, UHF (low) 125W
800MHz to 1GHz 50W

***IS-75F-C1*** Throughput Energy: ≤1mJ* (F Connector/Surface)
Frequency Range: 4MHz to 900MHz VSWR ≤1.2:1
Max. Power: HF 100W, VHF 100W, UHF 25W

***Add suffix:*** ***-MA*** *for male antenna port connector*
***-ME*** *for male equipment port connector*

**Typical*
*Choose lowest throughput energy for desired frequency.*
*Energy based on 6kV/3kA 8/20µs waveform.*


# Grounding Kits

A well designed system uses grounding kits to provide a bond between the cable and the tower/earth ground system. One grounding kit is recommended at tower top, tower bottom, at 200 ft (60 m) intervals (where applicable), and at the entrance to the equipment shelter.

**SureGround™ and SureGround Plus™ Series and 204989 and 241088 Series Grounding Kits offer:**

- *Solid copper construction for high current handling capability, compatibility with copper cable outer conductors, and long life.*
- *Meet military standards at commercial prices.*
- *Provide certainty of continued operation. Tested at an independent laboratory to withstand 200,000 amps.*

Andrew 204989 and 241088 series solid copper grounding kits have passed United States Air Force lightning simulation tests and meet MIL-STD-188-124A. The non-braided solid copper construction of all Andrew grounding kits eliminates corrosion caused by moisture retention and "wicking." A heat shrink tube protects the cable terminal connection.

**SureGround Plus Grounding kits**

Transmission line grounding has never been easier. With only four parts, SureGround Plus grounding kits combine the exclusive wraparound SureGround grounding strap with a preformed rubber weatherproofing boot for fast, sure installation and neat appearance.

**Heavy Duty Ground Lead**

Andrew grounding kits utilize heavy duty 16 mm² ground leads to maximize performance. The IEC 1024-1 compliant copper ground lead reduces dc resistance. The extremely pliable jacket provides protection and makes it easy to maneuver the lead into position for attachment to the down conductor.

**Easy Installation**

**Standard Grounding Kits (204989 and 241088 series)** require few steps to install and include easy to follow instructions. Proper tensioning is ensured by an expansion section which provides visual indication that the strap is secured.

**SureGround Grounding Kits** install in less than half the time required for standard grounding kits. Factory assembled into one component, they feature a pre-formed clip-on grounding strap for easy, snap-on installation.

**SureGround Plus Grounding Kits** are even easier to install. Simply remove a short length of cable jacketing, snap the wraparound strap in place, slip the rubber boot into place and secure with clamps.

**Kits Include**

**Standard Grounding Kits for 1/2" and Larger Cables.** Series 204989 and 241088 kits include a solid copper strap riveted to the grounding wire, a coiling tool for proper tightening, tower attachment hardware, and a two-part tape weatherproofing system. Field-attachable, crimp-on grounding lugs require the use of a crimping tool (not included, described below).

**Standard Grounding Kit for 1/4" and 3/8" Cables.** Includes a solid copper strap, connection hardware, tower atachment hardware, and a two-part tape weatherproofing system .....Type **223158**

**SureGround Grounding Kit** is a one-piece factory assembled ground strap which includes a two-part tape weatherproofing system.

**SureGround Plus Grounding Kits** include a factory assembled ground strap, a preformed rubber boot and two clamps.

# NARRATIVE - EXHIBIT "E"

Backup PSAP Agreement between
Wabash County ETSB and Richland County ETSB

# AGREEMENT

THIS AGREEMENT made and entered into this 5 day of June, 2000, by and between the Wabash County Emergency Telephone System Board, hereinafter referred to as Wabash County E.T.S.B., and the Richland County Emergency Telephone System Board, hereinafter referred to as Richland County E.T.S.B.,

WITNESSETH:

1. The Wabash County E.T.S.B. is implementing an E-911 Emergency Telephone System pursuant to the majority vote of the residents of Wabash County on April 1, 1997.

2. The Wabash County E.T.S.B. is implementing said system in cooperation with the governing boards of the City of Mt. Carmel and the County of Wabash, Illinois.

3. Pursuant to Illinois Commerce Commission Rules & Regulations governing E-911 systems, the Wabash County E.T.S.B. must provide for a back up Public Service Answering Point, hereinafter referred to as PSAP, to immediately answer all E-911 calls not originally answered by the Wabash County PSAP.

4. The Wabash County E.T.S.B. and it's cooperative governing boards wish to enter into an agreement with the Richland County E.T.S.B. and its governing boards whereby the Richland County Sheriff's Office PSAP will provide back up service for E-911 calls directed to Wabash County.

NOW, THEREFORE, in consideration of the mutual promises and undertakings herein contained, the parties freely and voluntarily agree as follows:

A. The Richland County Sheriff's Office PSAP will serve as a back up to the Wabash County E.T.S.B. observing all rules and regulations set forth by the Illinois Commerce Commission governing operations of an E-911 emergency answering system.

B. **WABASH COUNTY E.T.S.B.'S OBLIGATIONS SHALL, AT IT'S EXPENSE**,:

1. Provide such equipment as is reasonably necessary to operate the Richland County back up PSAP.

2. Keep said equipment in good repair and in working order. Richland County E.T.S.B. shall reasonably safeguard said equipment.

3. Provide MapInfo digitized mapping for the County of Wabash to be installed on the Richland County mapping system.

4. Coordinate with the Richland County E.T.S.B. to promulgate operational procedures of the PSAP.

5. In the event the Wabash County PSAP is out of service for any period in excess of two hours, the Wabash County E.T.S.B. will, at the discretion of the Richland County E.T.S.B.,:

(a) Send a telecommunicator to Olney to handle Wabash County 9-1-1 calls, or,

(b) Wabash County E.T.S.B. shall be responsible and pay whatever expense Richland County E.T.S.B. may incur in supplying a telecommunicator to handle 9-1-1 calls for any outage up to a period of eight (8) hours.

6. In the event the Wabash County PSAP is out of service for any period in excess of eight (8) hours, the Wabash County E.T.S.B. shall send a telecommunicator to Olney to handle the Wabash County 9-1-1 calls.

7. In the event Richland County PSAP receives a Wabash County 9-1-1 call, and cannot contact any Wabash County Agency, Richland County Emergency Services shall respond to said call and the Wabash County E.T.S.B. shall be responsible for the cost of the same.

8. The Wabash County E.T.S.B. shall reimburse Richland County E.T.S.B. for the cost of additional personnel to operate said PSAP during a state of emergency declared to exist within Wabash County, or any part thereof, by the appropriate federal, state, or local governmental authorities.

C. **MODIFICATION:** No modification of this agreement shall be effective unless in writing and approved by the governing boards of each party.

D. **TERM:** This Agreement shall be for a term of two years from and after the date of this Agreement. This Agreement shall renew automatically on the same provisions for successive two year terms unless either party gives notice of its intent not to renew this Agreement. Said notice of a party's intent not to renew this Agreement shall be in writing and delivered to the other party by certified mail and shall terminate six (6) months from date of receipt of said certified mail notice.

E. **RIGHTS UPON TERMINATION:** If this Agreement is terminated by either party or either party elects not to renew this Agreement at the end of its term, the Wabash County E.T.S.B. shall recover any hardware or communications equipment provided to the Richland County E.T.S.B.

F. **INDEMNIFICATION:** Each party shall indemnify and hold the other party harmless for damages, including attorneys' fees and costs, that the other party incurs as a result of this party's negligence.

G. **EFFECTIVENESS:** This Agreement shall be in full force and effect after its approval by each party's governing body and execution by each party's authorized officers.

H. **DUPLICATE ORIGINALS:** This Agreement shall be executed in duplicate originals, with each party retaining one of the originals.

IN WITNESS WHEREOF, the parties have executed this Agreement on the date hereinabove set forth.

WABASH COUNTY E.T.S.B.

BY: _____
Jimmy L. Seaton, Chairman

RICHLAND COUNTY E.T.S.B.

BY: _____
Mike Bauman, Chairman

# NARRATIVE - EXHIBIT "F"

Miller Management Services, Inc.
Professional Services Agreement

## PROFESSIONAL SERVICES AGREEMENT

**THIS AGREEMENT**, by and between Wabash County Emergency Telephone System Board, Post Office Box 5, Mt. Carmel, Illinois 62863, hereinafter referred to as "OWNER", and Miller Management Services, Inc., 1390 Boone Industrial Drive, Columbia, Missouri 65202, hereinafter referred to as "CONSULTANT".

WITNESSETH

**PROJECT**: OWNER hereby contracts with CONSULTANT to perform the following described services, hereinafter collectively referred to as the "PROJECT":
Professional services relating to rural addressing and mapping for Enhanced 911 in Wabash County. Services offered shall be in accordance with Request for Bid prepared by Wabash County and proposal submitted by Miller Management Services, Inc. dated January 13, 1998 both of which are incorporated into the contract by reference.

**CONSULTANT'S COMPENSATION**: The CONSULTANT shall be paid for all services rendered on the following basis:
Lump sum fee of Forty-nine thousand, six hundred fifty-three dollars ($49,653) for tasks I – VI on cost proposal submitted to the County. Optional products and services may be authorized at prices submitted in proposal dated January 13, 1998 at any time during the project.

**GENERAL PROVISIONS**: See reverse side.

**SPECIAL PROVISIONS**: The OWNER and the CONSULTANT mutually agree that this Agreement shall be subject to the following special provisions which, together with the General Provisions hereof, and the exhibits hereto, represent the entire Agreement between OWNER and CONSULTANT. CONSULTANT to supply twenty-five (25) color paper maps.

**IN WITNESS WHEREOF**, the parties hereto have made and executed this Agreement.

OWNER:
Wabash County Emergency Telephone System Board

By: Dennis Poland

Name: Dennis Poland

Title: Chairman

By: Jimmy Seaton

Name: Jimmy Seaton

Title: Vice Chairman

Date: 3-10-98

CONSULTANT:
Miller Management Services, Inc.

By: James W. O'Loughlin

Name: James W. O'Loughlin

Title: President

By: Mary Ann Kaiser

Name: Mary Ann Kaiser

Title: Executive Vice President

Date: 2-12-98

## GENERAL PROVISIONS

I. ADDITIONAL SERVICES: During the performance of the services in connection with this PROJECT, the OWNER may from time to time request additional services. Prior to beginning of Additional Services, CONSULTANT will provide a written cost estimate and obtain any required written approval.

II. PAYMENT OF ACCOUNT: During the performance of services under this Agreement, the CONSULTANT shall submit an invoice at the end of each month to the OWNER for services rendered to date. Interest shall be charged on the unpaid balance of any invoice not paid within thirty (30) days after the receipt thereof, at the rate of 9 % per annum until paid in full. In the event that any invoice or any portion thereof shall remain unpaid for a period of thirty (30) days after the date of receipt thereof, the CONSULTANT may, after giving seven (7) days written notice to the OWNER, suspend the performance of services under this Agreement until all invoices issued prior thereto have been paid in full.

III. TERMINATION: This Agreement may be terminated by either party by seven (7) days written notice in the event of a substantial failure to perform in accordance with the terms hereof by one party, through no fault of the other party. In the event of termination by CONSULTANT in accordance with this paragraph, CONSULTANT shall be compensated as provided for in Paragraph IV hereof.

IV. COMPENSATION - TERMINATION OR DELAY: If any phase of the PROJECT is suspended for more than three (3) months, or abandoned after written notice from the OWNER, or if the Agreement is terminated for any reason any time prior to the completion of the PROJECT, the CONSULTANT shall be paid for services preformed prior to the receipt of such written notice from the OWNER, based upon the actual time and expense incurred prior to termination by CONSULTANT. Compensation shall only be due CONSULTANT if the termination or delay is through no fault of CONSULTANT.

V. SUCCESSORS AND ASSIGNS: This Agreement shall be binding upon the parties hereto, their heirs, successors, and assigns. Neither the OWNER nor CONSULTANT shall assign, sublet or transfer his interest in this Agreement without the written consent of the other party. Nothing herein shall be construed as giving any rights or benefits hereunder to any one other than the OWNER and CONSULTANT.

VI. RETAINAGE: The owner reserves the right to retain ten percent (10%) of the amount of each invoice until the ninety-nine (99%) MSAG validity required by the Illinois Commerce Commission has been achieved, as certified by the telephone companies which serve the county. No interest will be applied to Retainage.

Authorized by the County this 10 day of March, 1998.

Dennis Poland

Name: Dennis Poland
Title: Chairman

Attested:

Jimmy A. Seaton

Name: Jimmy Seaton
Title: Vice Chairman

**Addendum #1**

**Professional Services Agreement**
**By and Between the Wabash County Emergency Telephone System Board**
**And**
**Miller Management Services, Inc.**

This addendum is to be made part of an agreement executed on 03-10, 1998 between the Wabash County Emergency Telephone Service Board and Miller Management Services, Inc. for professional services relating to the implementation of 9-1-1.

The Wabash County Emergency Telephone Service Board hereby authorized Miller Management Services, Inc. to provide the following optional services and/or products:

| YES | NO | | |
|---|---|---|---|
| ___ | ✓ | 500 24' x 36' black and white maps | $3,960.00 |
| ___ | ✓ | 200 8' x 11' county road reference books | $3,950.00 |
| ___ | ✓ | County Road Index | $1,960.00 |
| ___ | ✓ | Computer Aided Addressing System (MOMS)<br>• MapInfo for Windows (single user)<br>• Mapping Operations Manager software (MOMS)<br>• 90 days upgrade and telephone support<br>• Training on MOMS and MapInfo<br>• First year's upgrades and telephone support | $14,440.00 |
| ___ | ✓ | BaseInfo Automatic 9-1-1 map display (two stations) | $13,275,00 |
| ___ | ✓ | Real Time differential GPS system<br>• Software<br>• Hardware<br>• Installation<br>• Training<br>• First year's telephone support | $2,950.00 |
| ___ | ✓ | Radio System Coordination | $7,500.00 |
| ___ | ✓ | Road Signs Coordination | $4,000.00 |
| ✓ | ___ | Performance Bond (Payable in Advance) | $3,475.71 |

## ADDENDUM #2

## TO THE AGREEMENT FOR 911 PROFESSIONAL SERVICES BETWEEN MILLER MANAGEMENT SERVICES, INC. AND THE WABASH COUNTY EMERGENCY TELEPHONE SYSTEM BOARD

The Wabash County Emergency Telephone Service Board hereby authorizes Miller Management Services, Inc. to provide the following optional services and/or products:

| YES | NO | | |
|---|---|---|---|
| X | ___ | 500 24' by 36' black & white maps | $ 3,960.00 |
| X | ___ | 200 8' x 11' county road reference books | $ 3,950.00 |
| ___ | ___ | County Road Index | $ 1,960.00 |
| ___ | ___ | Computer Aided Addressing System (MOMS)<br>♦ MapInfo for Windows (single user)<br>♦ Mapping Operations Manager software (MOMS)<br>♦ 90 days upgrade and telephone support<br>♦ Training on MOMS and MapInfo<br>♦ First year's upgrades and telephone support | $14,440.00 |
| ___ | ___ | BaseInfo Automatic 9-1-1 map display (two stations) | $13,275.00 |
| ___ | ___ | Real Time differential GPS System<br>♦ Software<br>♦ Hardware<br>♦ Installation<br>♦ Training<br>♦ First year's telephone support | $ 2,950.00 |
| ___ | ___ | Radio System Coordination | $ 7,500.00 |
| ___ | ___ | Road Signs Coordination | $ 4,000.00 |

Authorized by the County this 14th day of September, 1999.

Dennis R Poland

Name: Dennis Poland
Title: Chairman

Attested:

Jimmy L Seaton

Name: Jimmy Seaton
Title: Vice Chairman